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Pre-operative ultrasound diagnosis and successful surgery of a stomach incarcerated in epigastric hernia: a rare case report

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Abstract: An incarcerated epigastric hernia (localized in *linea alba*) is a very rare observation. Here, we present a case of a 66-year-old white male who was admitted to the emergency department due to vomiting and epigastric pain. On physical examination, the only observed abnormality was a painless soft epigastric tumor located in the upper midline, measuring about 12 cm in diameter. The patient claimed that he had the tumor for more than 30 years and it never changed in diameter nor caused him any discomfort. A lipoma was initially suspected. However, an ultrasound of the abdomen revealed an incarcerated stomach, trapped due to the defect in the epigastric abdominal wall. The patient was sent for surgery and the presence of an incarcerated epigastric hernia of the linea alba, which contained the anterior wall of the stomach was confirmed. The presented case confirms that the use of ultrasonography may be an effective method to recognize unusual types of hernias, and that ultrasonography should be routinely used in emergency departments.

Keywords: epigastric hernia, stomach incarceration, ultrasound.

Introduction

Epigastric hernias occur frequently. They constitute the second most common type of linea alba abdominal defects in adults [1, 2]. However, incarcerated epigastric hernias are very rare. Using Pub Med, we found only four such case presentations. The

incarcerated organs that were described included: a Meckel diverticulum, small intestine loop, and antrum of the stomach. The incarcerated hernias were diagnosed by an abdominal tomography [3–6]. In this case presentation we described an episode of an incarcerated stomach antrum through an epigastric hernia that was ultimately diagnosed in ultrasonography, which according to our knowledge is the first such case report presented.

Case presentation

A 66-year-old white male was admitted to the Emergency Unit due to vomiting and epigastric pain. On physical examination, the only observed abnormality was a painless soft epigastric tumor located in the upper midline, measuring about 12 cm in diameter. The patient claimed that the tumor has been present for more than 30 years, never changed in diameter and never caused any discomfort (Fig. 1).

Fig. 1. Patient's abdomen

Apart from the tumor, the abdomen was soft, nontender, and exhibited no peritoneal symptoms. Peristalsis was audible. The patient reported any other ailment. In the gastroscopy, no abnormalities were detected except for the observed irregularity of the gastric corpus folds, which was interpreted as a scarring puff. Passage through the pylorus, bulb and the distal part of the duodenum was normal. On plain abdominal radiography, no pathology was visualized.

The patient was initially consulted surgically and the consulting surgeon suspected that the tumor could be the result of a large lipoma. In the absence of indications for immediate surgical treatment, the patient was admitted to the internal medicine department, where the water-electrolyte balance was supplemented intravenously and spasmolytic drugs were administered. On the second day, after implementing the oral diet, the patient began to complain about a relapse of the epigastric pain. An abdominal ultrasound was ordered, which explained the cause of the ailment. Ultrasound of the abdomen revealed a dilated stomach with its wall incarcerated in the defect of the epigastric abdominal wall, supposedly a linea alba hernia (Fig. 2).

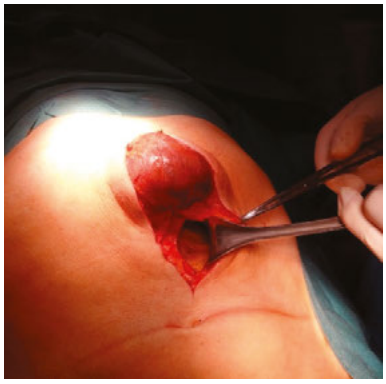
Fig. 2. Ultrasonography revealing stomach incarceration.

With the suspicion of an incarcerated epigastric hernia, the patient was transferred to the surgical ward and a decision to perform a laparotomy was made.

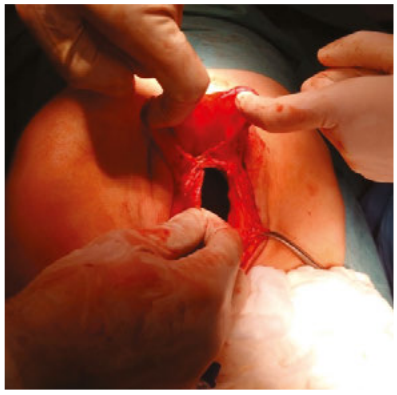
Exploration of the abdomen revealed the presence of an incarcerated hernia of the linea alba, which contained the front wall of the stomach and a fragment of the omentum. Ischemia of the entrapped content of the hernia was not observed. The defect was approximated with interrupted 3/0 absorbable sutures (the midline was reconstructed by closing the anterior fascia) and reinforced with a polypropylene mesh situated preperitoneally, between the peritoneum and the fascia of the *rectus*

muscles placed sub lay (Fig. 3). No tension was observed on approximation. Any separation component technique was needed.

A.



B.



C.

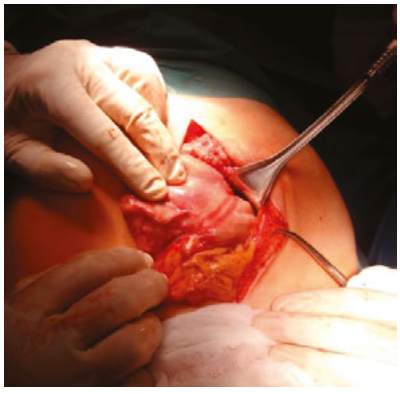


Fig. 3. The operation; A — opening the abdomen, B — opening the hernia sac, C — the incarcerated stomach.

The postoperative course was without complications. On the second day after the operation, an oral diet was introduced and the patient was discharged from the hospital.

Discussion

Epigastric herniation is a rather common illness, but only a minority is symptomatic. However, incarcerated abdominal hernia localized in linea alba is a very rare observation making this type of hernia incarceration very difficult to diagnose. That, presumably, is the reason for the scarce literature on this subject. In the available literature, we found descriptions of incarcerated Meckel diverticulum, intestinal loop, and antrum of the stomach. The diagnosis in all cases was mainly based on computed tomography [3–6].

In the present case, the diagnosis was complicated further by the history provided by the patient, in which the patient described the painless epigastric tumor as not changing dimensions and not causing any discomfort.

The differential diagnosis in patients with sudden vomiting, epigastric pain, and epigastric tumor should always include epigastric hernia. However, a in the presented case, the presence of a normal stomach wall during gastroscopy may have made the recognition of epigastric hernia difficult. Nevertheless, it is very important to remember that multiple vomiting episodes in such a patient may be a result of the stomach antrum incarcerated through an epigastric hernia. Diagnosis in these patients may be difficult, especially if the herniation is not visualized during gastroscopy and X-ray. In that case the final diagnosis was made by ultrasonography.

Ultrasonography continues to facilitate and improve diagnosis and treatment of external hernias in various locations [7–11]. In our case, the final diagnosis was also established during ultrasound examination. It is important to remember that modern ultrasonography may provide the effective means to recognize such type of hernia, and should be used more often during preliminary diagnostics in patients with abdominal pain.

Conclusion

1. Rare forms of hernia can cause some diagnostic doubts
2. Ultrasound examination of abdominal tumors should always be used as the initial diagnostic element, before admitting symptomatic patients to the hospital.
3. Examinations like CT, MR, and ultrasound should routinely be used in emergency departments, and ultrasound may be considered the most suitable as the first line diagnostic tool.

Conflict of interest

None declared.

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